

CLAIMS

1. An ultrasonic diagnostic apparatus comprising:
  - a probe that transmits/receives ultrasonic waves to/from a test subject;
  - a transmitting section that supplies a drive signal to the probe;
  - a receiving section that receives a reflection echo signal outputted from the probe;
  - an image constructing section that reconstructs a diagnostic image on the basis of the received reflection echo signal;
  - a display section that displays the diagnostic image constructed by the image constructing section; and
  - a control section that controls these sections,  
wherein the ultrasonic diagnostic apparatus includes a judging section that judges, on the basis of the diagnostic image information, that the probe is left in the air, and when the judging unit judges that the probe is left in the air, the control section controls the drive signal supplied to the probe from the transmitting section so as to suppress a rise in the temperature of the probe.

2. The ultrasonic diagnostic apparatus of claim 1, wherein the judging section includes at least one of a B image judging

unit that judges on the basis of a B image, a Doppler signal judging unit that judges on the basis of a Doppler signal, and a CFM judging unit that judges on the basis of a CFM image.

3. The ultrasonic diagnostic apparatus of claim 2, wherein the B image judging unit outputs a left-in-the-air detection signal when an integrated value of brightness is a high level for a certain period of time or greater, or when a calculated variance is greater than a set variance.

4. The ultrasonic diagnostic apparatus of claim 2, wherein the Doppler signal judging unit outputs a left-in-the-air detection signal when an added variance of the Doppler signal exceeds a preset threshold for a certain period of time or greater.

5. The ultrasonic diagnostic apparatus of claim 2, wherein the CFM judging unit outputs a left-in-the-air detection signal when it judges, on the basis of variance of the brightness and color hue of the CFM image, that the probe is left in the air.

6. The ultrasonic diagnostic apparatus of claim 2, further comprising switching means that switches between the B image judging unit, the Doppler signal judging unit, and the CFM judging unit, wherein the switching means switches at desired

time intervals.

7. The ultrasonic diagnostic apparatus of claim 2, wherein the Doppler signal is received for a certain period of time while the B image is being imaged, and the Doppler signal judging unit judges with the Doppler signal.

8. The ultrasonic diagnostic apparatus of claim 1, wherein when the control section judges that the probe is left in the air, the control section stops the drive signal supplied to the probe from the transmitting section or reduces the energy of the drive signal to be equal to or less than a set value.

9. The ultrasonic diagnostic apparatus of claim 1, wherein when the control section judges that the probe is left in the air, the control section reduces the frame rate of the diagnostic image.

10. The ultrasonic diagnostic apparatus of claim 8 or 9, wherein before the energy of the drive signal supplied to the probe from the transmitting section is reduced, or before the frame rate is reduced, information giving notification thereof is displayed on the display section.

11. The ultrasonic diagnostic apparatus of claim 10, wherein

the information giving notification is the period of time until the ultrasonic waves transmitted from the probe are stopped, the period of time until the image quality of the diagnostic image changes, or the period of time until the frame rate of the diagnostic image is reduced.

12. The ultrasonic diagnostic apparatus of claim 8 or 9, wherein the control section returns the energy of the drive signal supplied to the probe from the transmitting section, or the frame rate, to its original status on the basis of a command from an operation section, and transmits the ultrasonic waves to the test subject from the probe.

13. The ultrasonic diagnostic apparatus of claim 8, wherein a message representing the period of time until the energy of the drive signal supplied to the probe from the transmitting section is reduced to be equal to or less than the set value is displayed on the display section.

14. The ultrasonic diagnostic apparatus of claim 13, wherein the message is information giving notification of the period of time until the ultrasonic waves transmitted from the probe are stopped, the period of time until the image quality of the diagnostic image changes, or the period of time until the frame rate of the diagnostic image is reduced.

15. The ultrasonic diagnostic apparatus of claim 13 or 14, wherein the message is displayed while the display size, the display color, or other display aspects of the message change over time.